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EXAMINER	
VAUTROT, DENNIS L	

ART UNIT	PAPER NUMBER
2167	

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/779,355	PATTERSON ET AL.	
	Examiner	Art Unit	
	Dennis L. Vautrot	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/13/04 & 9/2404/*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 13 February 2004 and 24 September 2004 have been received and entered into the record. Since the IDS comply with the provisions of MPEP § 609, the references cited therein have been considered by the examiner. See attached forms PTO-1449.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3, 6, and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by **Marko et al.** (US 6,897,835).

4. Regarding claim 1, **Marko et al.** (hereinafter **Marko)** teaches a computer implemented method for storing data comprising: storing a composite data stream so that it may be restored (See column 4, lines 57-60 "As shown in FIG. 5, the segments

are provided with headers to facilitate their capture in a local storage device at the receiver."), said storing including,

Decomposing the composite data stream into a plurality of constituent data streams (See column 3, line 66 - column 4, line 4 "The receivers are therefore configured to demultiplex a received composite data stream using the synchronization symbols and the slot control field data to playback a selected one of the broadcast channels." Demultiplexing the stream is another way of saying decomposing the stream.);

Segmenting at least one of the plurality of constituent data streams (See column 4, lines 48 – 54 "In accordance with the present invention, a file to be transferred via the digital broadcast system such as the system is partitioned at the program center, broadcast station, or other device in the transmit segment of the system for transmission as segments."); and

Discarding those of the segments resulting from said segmenting which are determined to have been stored previously (See column 8, lines 5-9 "The segments 15-19 and 21-24 received during the morning commute are discarded by the receiver since they have already been successfully received and stored in the local storage device.")

5. Regarding claims 3 and 9, **Marko** teaches a first of the plurality of constituent data streams is user data and a second of the plurality of constituent data streams is administrative data. (See column 3, lines 57-60 "An exemplary composite data stream is illustrated in FIG 2. The system can broadcast a composite data stream generated,

for example, by time division multiplexing a plurality of broadcast channels, along with other data such as overhead data." Here the user data is the data from the broadcast channels and the overhead data is the administrative data.)

6. Regarding claim 6, **Marko** teaches the storing comprises segmenting each of the plurality of constituent data streams. (See column 4, lines 57-60 "As shown in FIG. 5, the segments are provided with headers to facilitate their capture in a local storage device at the receiver.")

Claim Rejections - 35 USC § 103

7. Claims 2, 8, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marko** as applied to claim 1 above, and further in view of **USENIX** (USENIX - "Proceedings of the FAST 2002 Conference and File and Storage Technologies", Monterey, California, January 28-30, 2002). **Marko** teaches a method for storing a composite data stream substantially as shown.

Marko fails to teach (See said decomposing includes: storing a composite data stream map that indicates how to recompose the plurality of constituent data steams into the composite data stream.

However, **USENIX** teaches said decomposing includes: storing a composite data stream map that indicates how to recompose the plurality of constituent data steams into the composite data stream. (See page 8, first column, lines 7-11 "A

separate index structure allows a block to be efficiently located in the log; however, the index can be regenerated from the data log if required and thus does not have the same reliability constraints as the log itself." The map of the claim is essentially the log of the source.)

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teaching of **Marko** with the data stream map of **USENIX** because it will allow for the data stream to be regenerated after it has been stored in a segmented fashion. It is for this reason that one of ordinary skill in the art would have been motivated to include said decomposing includes: storing a composite data stream map that indicates how to recompose the plurality of constituent data steams into the composite data stream.

8. Claims 4, 5, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marko** as applied to claim 1 above, and further in view of **Hattrup et al.** (US 2004/0243643).

9. Regarding claims 4 and 10 **Marko** teaches a method for storing a composite data stream substantially as shown. **Marko** fails to teach said storing further comprises: determining a first of said plurality of constituent data streams is administrative data that may be restored by regeneration rather than being stored; and discarding said first constituent data stream.

However, **Hattrup et al.** (hereinafter **Hattrup**) teaches said storing further comprises: determining a first of said plurality of constituent data streams is administrative data that may be restored by regeneration rather than being stored; and discarding said first constituent data stream. (See page 4, paragraph [0055] "the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate the metadata as needed." In the specification on page 14, "regenerating" is defined as "determining it on the fly/dynamically" as is being done here.)

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teaching of **Marko** with the regeneration of **Hattrup** because by being able to generate the data on the fly, that portion does not have to be saved and space is used more efficiently. It is for this reason that one of ordinary skill in the art would have been motivated to include said storing further comprises: determining a first of said plurality of constituent data streams is administrative data that may be restored by regeneration rather than being stored; and discarding said first constituent data stream.

10. Regarding claims 5 and 11, **Marko** teaches a method for storing data as shown. **Marko** fails to teach the administrative data is tape markers and/or header information, such as time stamps. However, **Hattrup** teaches the administrative data is tape markers and/or header information, such as time stamps. (See page 4, paragraph

[0058] "In a preferred embodiment, the metadata also includes markers for insertion at predetermined positions within the set of data included in the autonomous operation. The markers may include by way of example a unique identifier, a timestamp, error checking information...specific to a subset of the data from the data source.") It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of **Marko** with the header information of **Hattrup** because they both teach having information in the header, but **Hattrup** adds timestamp information which would allow the program to be able to keep track of when changes were made as well. It is for this reason that one of ordinary skill in the art would have been motivated to include the administrative data is tape markers and/or header information, such as time stamps.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Marko** in view of **Muthitacharoen** (Athicha Muthitacharoen, Benjie Chen, and David Mazieres "A Low-bandwidth Network File System", MIT Laboratory for Computer Science and NYU Department of Computer Science) (hereinafter **Muthiatacharoen**). **Marko** teaches a computer implemented method for efficiently storing data comprising: receiving over time a plurality of composite data streams, said plurality of composite data streams representing snapshots of data residing at a set of one or more sources taken over said time (See column 4, lines 4-8 "The programming center is configured to obtain content from different sources and provides which can comprise both analog and digital

information such as audio, video, data, program label information, auxiliary information and so on.");

and storing each of said plurality of composite data streams so that it may be restored (See column 4, lines 57-60 "As shown in FIG. 5, the segments are provided with headers to facilitate their capture in a local storage device at the receiver."),

said storing including, decomposing the composite data stream into a plurality of constituent data streams (See column 3, line 66 - column 4, line 4 "The receivers are therefore configured to demultiplex a received composite data stream using the synchronization symbols and the slot control field data to playback a selected one of the broadcast channels." Demultiplexing the stream is another way of saying decomposing the stream.);

segmenting the constituent data stream (See column 4, lines 48 – 54 "In accordance with the present invention, a file to be transferred via the digital broadcast system such as the system is partitioned at the program center, broadcast station, or other device in the transmit segment of the system for transmission as segments.");

and storing only those segments of the constituent data stream that cannot be restored using segments already stored as a result of storing a previous one of said plurality of composite data streams (See column 8, lines 5-9 "The segments 15-19 and 21-24 received during the morning commute are discarded by the receiver since they have already been successfully received and stored in the local storage device.")

Marko fails to teach not teach storing using segment reuse a set of one or more of said plurality of constituent data streams, said storing using segment reuse including performing the following for each of said constituent data streams,

However **Muthitachoaroen** teaches storing using segment reuse a set of one or more of said plurality of constituent data streams, said storing using segment reuse including performing the following for each of said constituent data streams (See page 13, second column ("LBFS breaks files into chunks based on contents, using the value of a hash function on small regions of the file to determine chunk boundaries. It indexes file chunks by their has values, and subsequently looks up chunks to reconstruct files that contain the same data without sending that data over the network.")

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of **Marko** with the segment reuse teachings of **Muthitachoaroen** because of the efficiency and storage space saving benefits that are provided by using segment reuse. It is for this reason that one of ordinary skill in the art would have been motivated to include storing using segment reuse a set of one or more of said plurality of constituent data streams, said storing using segment reuse including performing the following for each of said constituent data streams.

12. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marko** in view of **Muthitacharoen** (Athicha Muthitacharoen, Benjie Chen, and David Mazieres "A Low-bandwidth Network File System", MIT Laboratory for Computer

Science and NYU Department of Computer Science) (hereinafter **Muthiatacharoen**) and in further in view of **Hattrup et al**.

13. Regarding claim 12, **Marko** teaches a computer implemented method for storing data comprising: storing a composite data stream so that it may be restored (See column 4, lines 57-60 "As shown in FIG. 5, the segments are provided with headers to facilitate their capture in a local storage device at the receiver."),

said storing including, decomposing the composite data stream into a plurality of constituent data streams (See column 3, line 66 - column 4, line 4 "The receivers are therefore configured to demultiplex a received composite data stream using the synchronization symbols and the slot control field data to playback a selected one of the broadcast channels." Demultiplexing the stream is another way of saying decomposing the stream.);

Marko fails to teach backing up each of said plurality of constituent data streams separately, said backing up including, applying segment reuse to back up a first set of one or more of said plurality of constituent data streams.

However **Hattrup et al**. teaches backing up each of said plurality of constituent data streams separately. (See page 1, paragraph [0013] "Because the users often desire privacy and security for the data, it is desirable that any backup operations that insert metadata into a user's data stream also remove the metadata and restore the data to its original form. In this manner, the user can be confident that the data is secure and the privacy is preserved.") It would have been obvious to one with ordinary

skill in the art at the time of the invention to combine the teachings of **Marko** with the teachings of **Hattrup** because, as stated in **Hattrup**, backing up the streams separately provide for additionally privacy and security for the data. It is for this reason that one of ordinary skill in the art would have been motivated to include backing up each of said plurality of constituent data streams separately.

Also, **Muthitachoaroen** teaches applying segment reuse to back up a first set of one or more of said plurality of constituent data streams. (See page 13, second column ("LBFS breaks files into chunks based on contents, using the value of a hash function on small regions of the file to determine chunk boundaries. It indexes file chunks by their has values, and subsequently looks up chunks to reconstruct files that contain the same data without sending that data over the network.") It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of **Marko** with the segment reuse teachings of **Muthitachoaroen** because of the efficiency and storage space saving benefits that are provided by using segment reuse. It is for this reason that one of ordinary skill in the art would have been motivated to include applying segment reuse to back up a first set of one or more of said plurality of constituent data streams.

14. Regarding claim 14, **Marko** and **Muthitachoaroen** teach a computer implemented method substantially as claimed. **Marko** and **Muthitachoaroen** fail to teach discarding a second set of one or more of said plurality of constituent data

streams because they are administrative data that may be restored using regeneration as opposed to storage.

However, **Hattrup** teaches discarding a second set of one or more of said plurality of constituent data streams because they are administrative data that may be restored using regeneration as opposed to storage. (See page 4, paragraph [0055] "the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate the metadata as needed." In the specification on page 14, "regenerating" is defined as "determining it on the fly/dynamically" as is being done here.)

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teaching of **Marko** and **Muthitachoaroen** with the regeneration of **Hattrup** because by being able to generate the data on the fly, that portion does not have to be saved and space is used more efficiently. It is for this reason that one of ordinary skill in the art would have been motivated to include discarding a second set of one or more of said plurality of constituent data streams because they are administrative data that may be restored using regeneration as opposed to storage.

15. Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marko** in view of **USENIX** (USENIX - "Proceedings of the FAST 2002 Conference

and File and Storage Technologies", Monterey, California, January 28-30, 2002) and further in view of **Muthitacharoen**.

16. Regarding claim 15, **Marko** teaches an apparatus to back up data comprising: an interface agent to receive over time composite data streams representing snapshots of data residing at a set of one or more sources (See column 4, lines 4-8 "The programming center is configured to obtain content from different sources and provides which can comprise both analog and digital information such as audio, video, data, program label information, auxiliary information and so on.");

a composite data stream decomposer/recomposer, coupled to said interface agent, to decompose composite data streams into their constituent data streams (See column 3, line 66 - column 4, line 4 "The receivers are therefore configured to demultiplex a received composite data stream using the synchronization symbols and the slot control field data to playback a selected one of the broadcast channels." Demultiplexing the stream is another way of saying decomposing the stream.);

Marko fails to teach recompose composite data streams from their constituent data streams; and a segment reuse storage system, coupled to said composite data stream decomposer/recomposer, to store and restore constituent data streams.

However **USENIX** teaches recomposing composite data streams from their constituent data streams (See page 8, first column, lines 7-11 "A separate index structure allows a block to be efficiently located in the log; however, the index can be

regenerated from the data log if required and thus does not have the same reliability constraints as the log itself.")

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teaching of **Marko** with the recomposing of **USENIX** because it will allow for the data stream to be regenerated after it has been stored in a segmented fashion. It is for this reason that one of ordinary skill in the art would have been motivated to include recomposing composite data streams from their constituent data streams

Also, **Muthitachoaroen** teaches a segment reuse storage system, coupled to said composite data stream decomposer/recomposer, to store and restore constituent data streams. (See page 13, second column ("LBFS breaks files into chunks based on contents, using the value of a hash function on small regions of the file to determine chunk boundaries. It indexes file chunks by their has values, and subsequently looks up chunks to reconstruct files that contain the same data without sending that data over the network.")

It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teachings of **Marko** with the segment reuse teachings of **Muthitachoaroen** because of the efficiency and storage space saving benefits that are provided by using segment reuse. It is for this reason that one of ordinary skill in the art would have been motivated to include a segment reuse storage system, coupled to said composite data stream decomposer/recomposer, to store and restore constituent data streams.

17. Regarding claim 19, **Marko** teaches the composite data stream decomposer/recomposer is a machine-readable medium having stored thereon a set of instructions, which, when executed by a set of one or more processors, cause the operations of the composite data stream decomposer/recomposer to be performed. (see column 3, lines 52-55 "A programming center is provided to generate and transmit a composite data stream via the satellites...which comprises a plurality of broadcast channels.")

18. Claims 17, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marko** in view of **USENIX** (USENIX - "Proceedings of the FAST 2002 Conference and File and Storage Technologies", Monterey, California, January 28-30, 2002) in view of **Muthitacharoen** as applied to claim 15 above and further in view of **Hattrup**.

19. Regarding claim 17, **Marko, USENIX,** and **Muthitacharoen** teach an apparatus to back up data substantially as claimed. **Marko, USENIX,** and **Muthitacharoen** fail to teach an administrative data regenerator, coupled to said composite data stream decomposer/recomposer, to regenerate data from constituent data streams that was not stored because that data could be restored by regeneration. However, **Hattrup** teaches an administrative data regenerator, coupled to said composite data stream decomposer/recomposer, to regenerate data from constituent data streams that was not

stored because that data could be restored by regeneration (See page 4, paragraph [0055] "the initialization module prepares metadata that describes or otherwise corresponds to the data of the data source...Alternatively, the initialization module may determine how to interface with the data source to dynamically generate the metadata as needed." In the specification on page 14, "regenerating" is defined as "determining it on the fly/dynamically" as is being done here.) It would have been obvious to a person with ordinary skill in the art at the time of the invention to combine the teachings of **Marko**, **USENIX**, and **Muthitacharoen** with that of **Hattrup** because by being able to generate the data on the fly, that portion does not have to be saved and space is used more efficiently. It is for this reason that one of ordinary skill in the art would have been motivated to include an administrative data regenerator, coupled to said composite data stream decomposer/recomposer, to regenerate data from constituent data streams that was not stored because that data could be restored by regeneration.

20. Regarding claim 18, **Marko, USENIX,** and **Muthitacharoen** teach an apparatus to back up data substantially as claimed. **Marko, USENIX,** and **Muthitacharoen** fail to teach the administrative data is regenerated in accordance with composite data stream attribute data retrieved from a configuration file. However, **Hattrup** teaches the administrative data is regenerated in accordance with composite data stream attribute data retrieved from a configuration file (See page 4, paragraph [0055] "Specifically, the initialization module preferable identifies the metadata source which may be data stored in memory or on a storage medium.") It would have been obvious to one with ordinary

skill in the art at the time of the invention to combine the teachings of **Marko, USENIX,** and **Muthitacharoen** with that of **Hattrup** because the data had to have been stored somewhere in order to regenerate the attribute data that was discarded and **Hattrup's** teaching is showing an example of that. It is for this reason that one of ordinary skill in the art would have been motivated to include teach the administrative data is regenerated in accordance with composite data stream attribute data retrieved from a configuration file.

21. Regarding claim 20, **Marko, USENIX,** and **Muthitacharoen** teach an apparatus to back up data substantially as claimed. **Marko, USENIX,** and **Muthitacharoen** fail to teach the composite data stream decomposer/recomposer is an application specific integrated circuit. However, **Hattrup** teaches the composite data stream decomposer/recomposer is an application specific integrated circuit. (See page 3, paragraph [0045] "For example, a module may be implemented as a hardware circuit comprising custom VLSI circuits or gate arrays, off-the-shelf semiconductors such as logic chips, transistors, or other discrete components.") It would have been obvious to one with ordinary skill in the art at the time of the invention to combine the teaches of **Marko, USENIX,** and **Muthitacharoen** with that of **Hattrup** because it is well known that integrated circuits are simply another way of storing and executing programs, which offers the benefit of speed and performance over some other methods. It is for this reason that one of ordinary skill in the art would have been motivated to include the

composite data stream decomposer/recomposer is an application specific integrated circuit.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zhu et al. (6,928,526) teaches similar receiving data and dividing it into segments as well as including in the administrative data a timestamp.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis L. Vautrot whose telephone number is 571-272-2184. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dv
22 July 2006

Primary Examiner
Art Unit 2167